

SFA Interventions: New Techniques & Technology

TCT/Asia Pacific - 2005

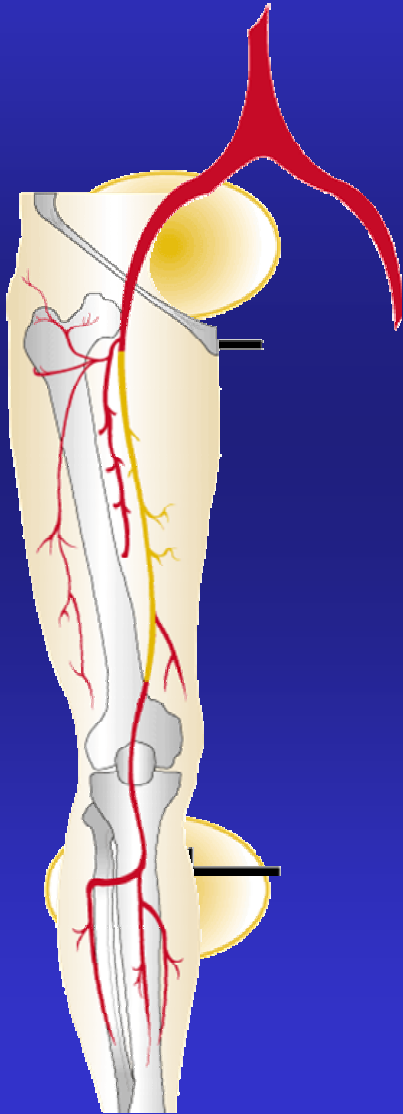
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Challenges Of F-P Revascularization

Factors Influencing Success



- **Unfavorable Anatomy**
In-Flow and Run-Off

Two Bifurcations/Articulations

**Unique Vessel Forces: Flexion,
Compression, Torsion, Pistoning**

- **Diffuse Disease**
High Incidence of Occlusive Disease

**Complex Lesion Morphologies
(ostial lesions/Ca++)**

Competitive Flow via PFA



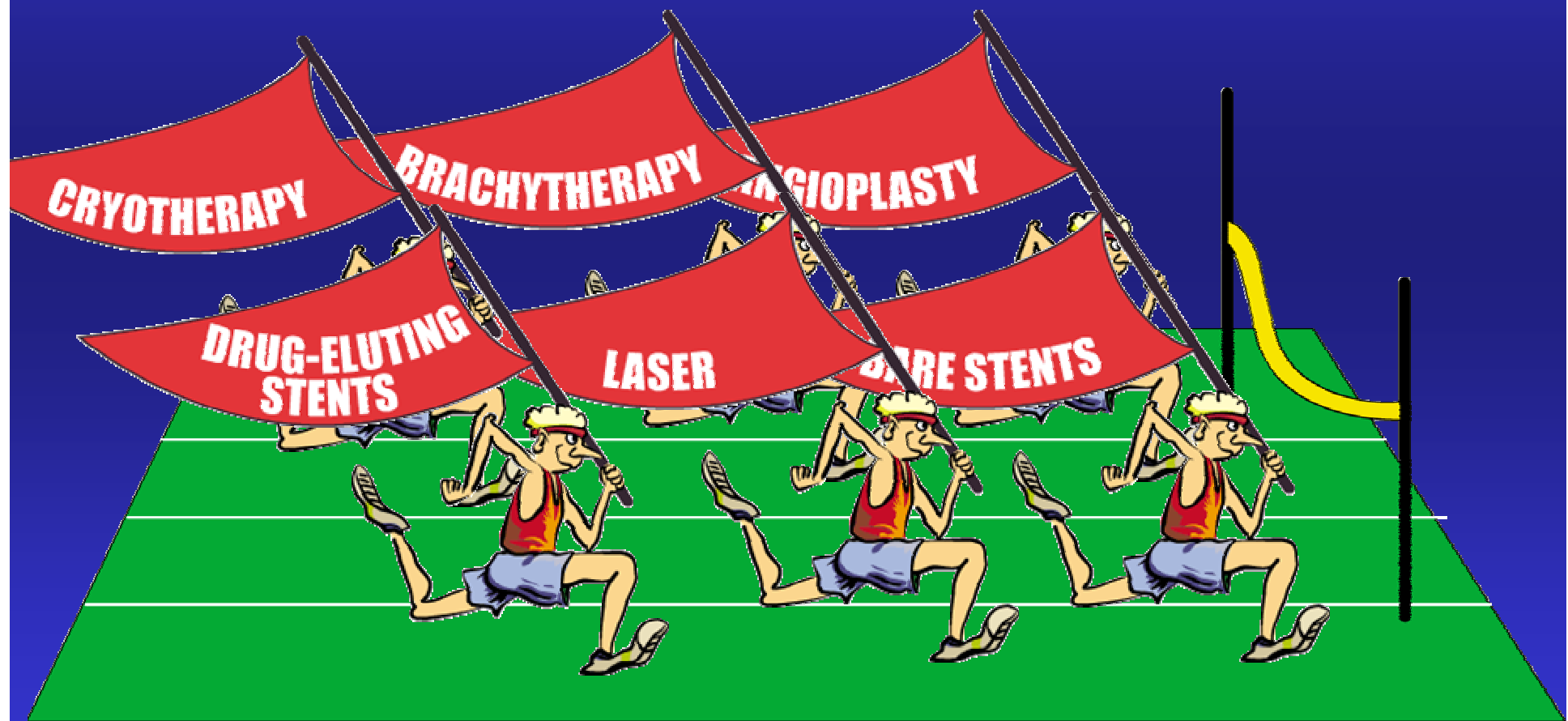
SFA Interventions – 2005

Lecture Goals:

- **UPDATE** on evolving technology clinical data
- **REVIEW** technical approach to complex SFA disease
- **DISCUSS** specifics of SFA CTO technique and technology



VESSEL PATENCY



The SFA: A hot bed of technical evolution

SFA Angioplasty: Acute and Late Clinical Results

	<i>Acute</i>	<i>Late (1-3 yr)</i>
Aorto-iliac	95-97%	85-93%
SFA/popliteal	72-95%	47-60%
Infrapopliteal	65-87%	35-60%

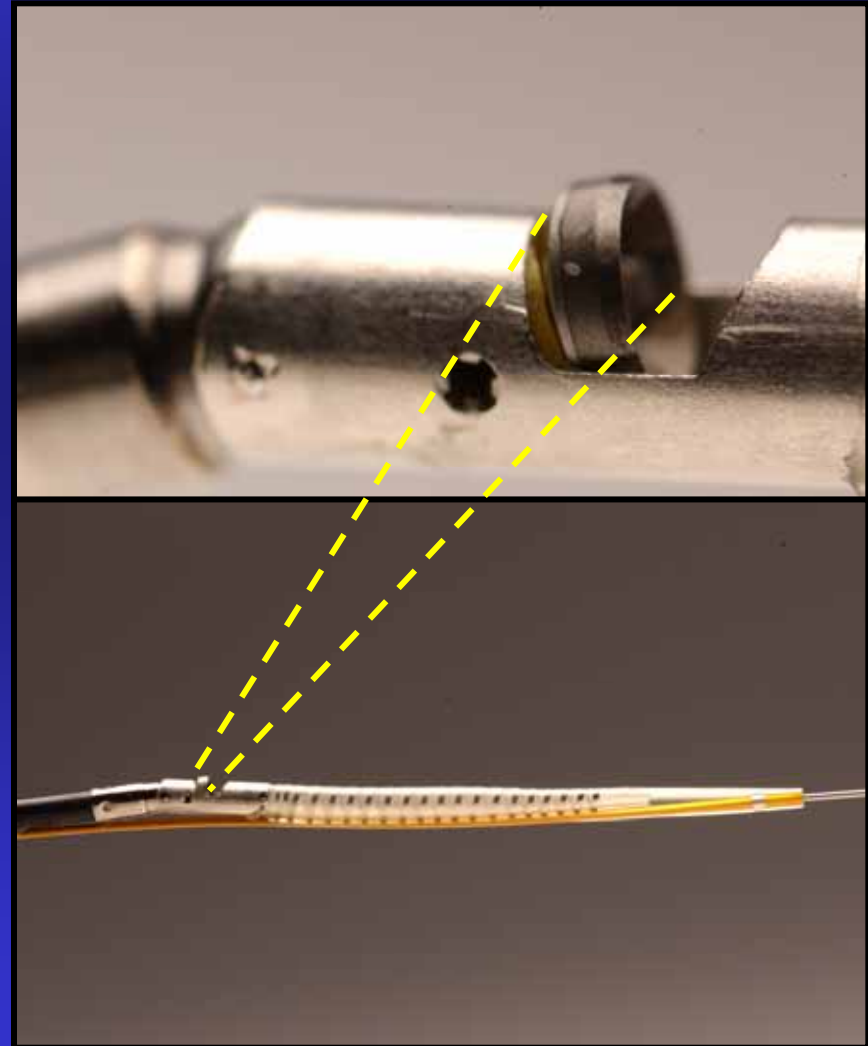
***Poor results have sparked pursuit
of new technologies***




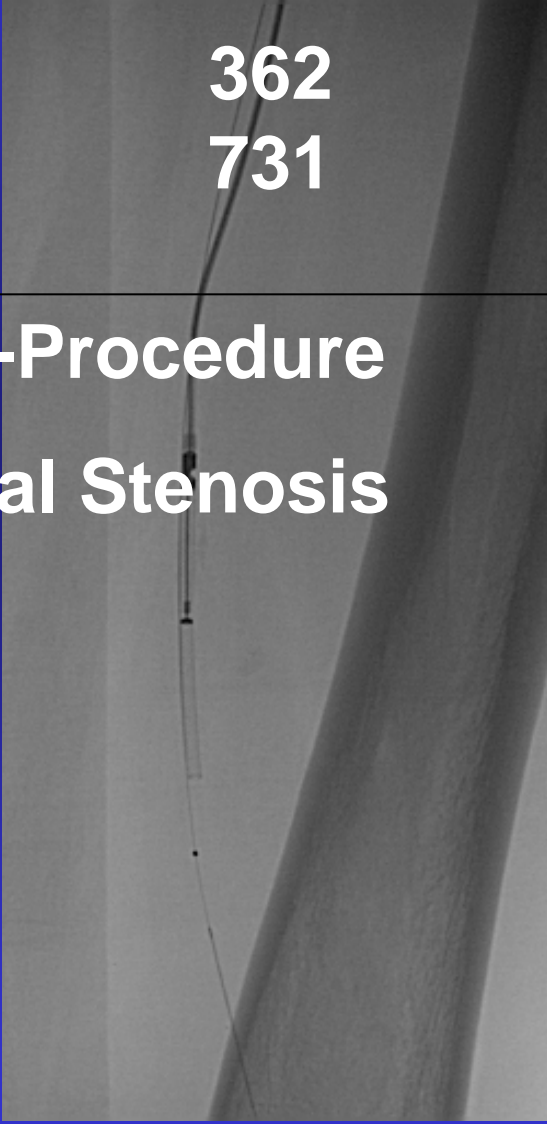
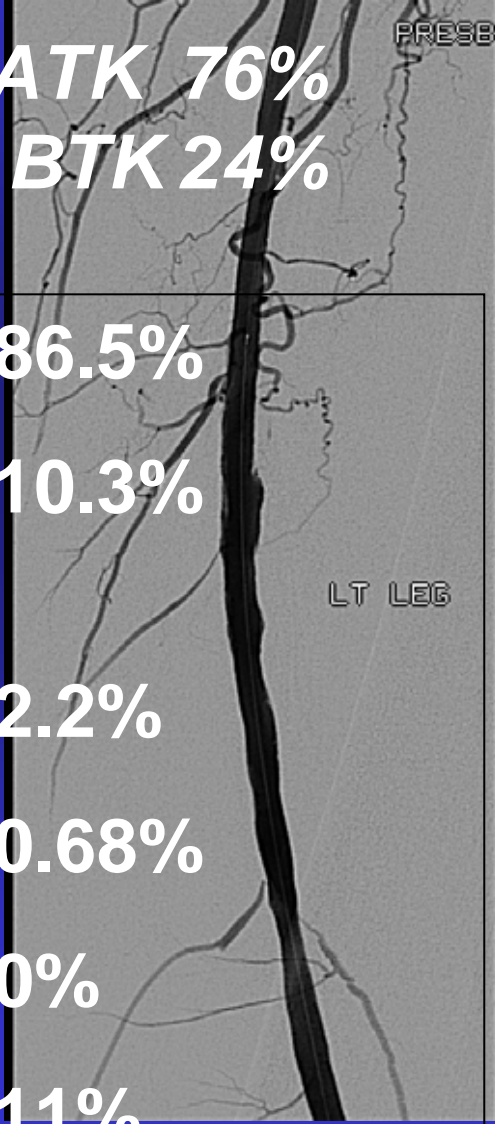
New Atherectomy Device

- Excises large volumes of plaque from de novo and restenotic lesions
- Single-operator, monorail catheter that can treat multifocal and multivessel disease

SilverHawk System



Silverhawk Talon Data

 <p>Patients Lesions</p>	 <p>362 731</p>	 <p>ATK 76% BTK 24%</p>
<p>Mean % DS Pre-Procedure</p>		<p>86.5%</p>
<p>Mean % Residual Stenosis (<i>Post-SH</i>)</p>		<p>10.3%</p>
<p>Dissections</p>		<p>2.2%</p>
<p>Perforations</p>		<p>0.68%</p>
<p>Embolization</p>		<p>0%</p>
<p>6-Month TLR</p>		<p>11%</p>

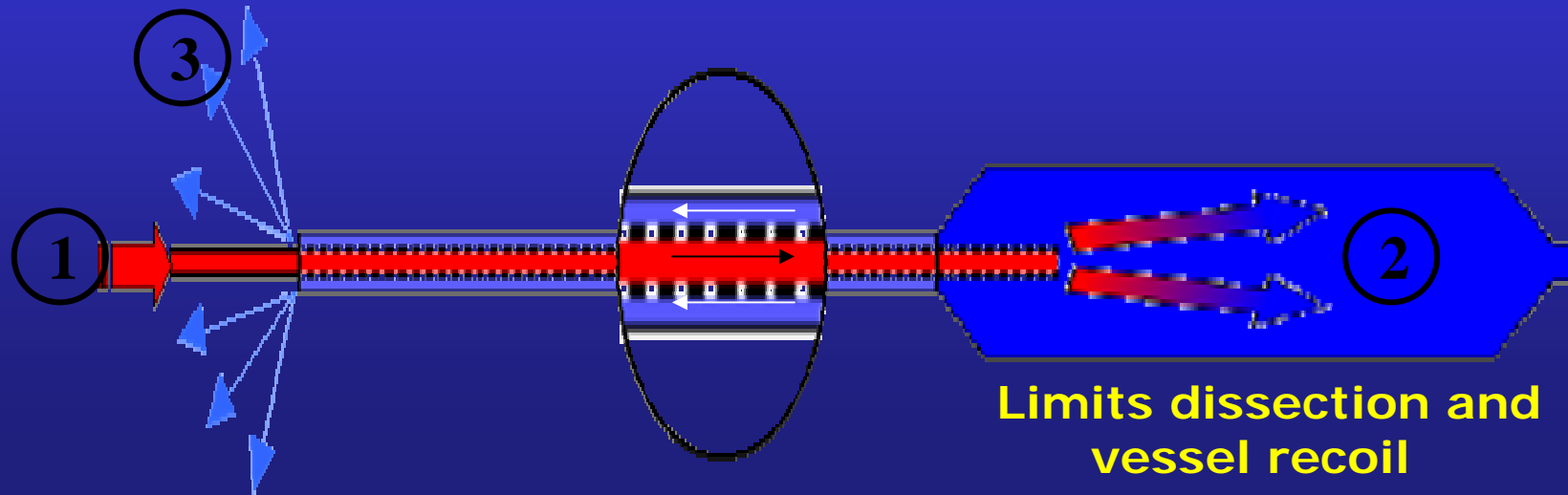
CryoPlasty: What is it?

- Cryoplasty is a new form of angioplasty that simultaneously dilates and cools the plaque and vessel wall at treatment site
- Cooling achieved by inflating the balloon with nitrous oxide instead of saline

Why CryoPlasty?

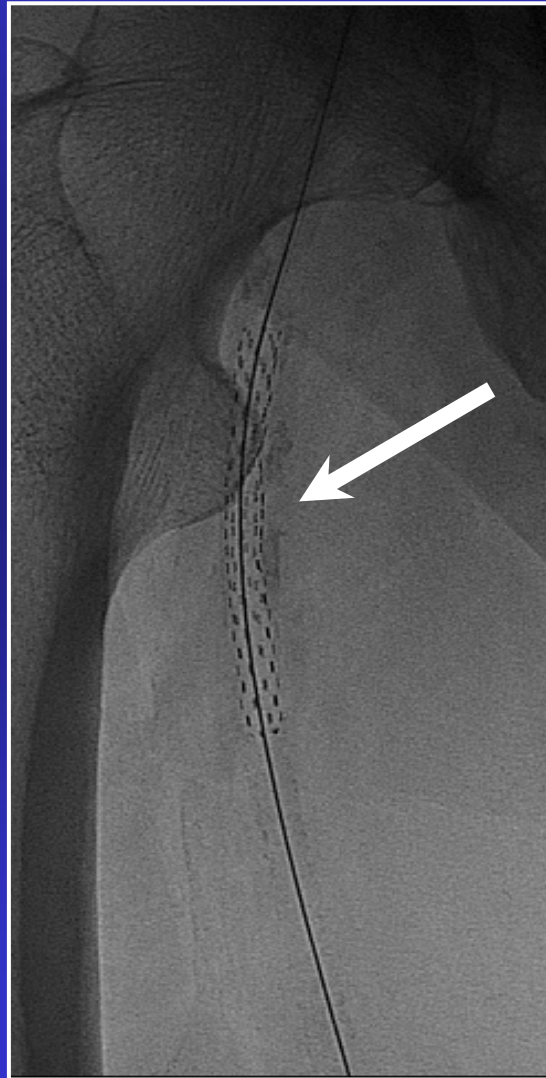
- Cryosurgical in vivo studies performed decades ago suggest freezing arterial tissues associated with a benign healing devoid of neointimal proliferation

CryoPlasty Principles

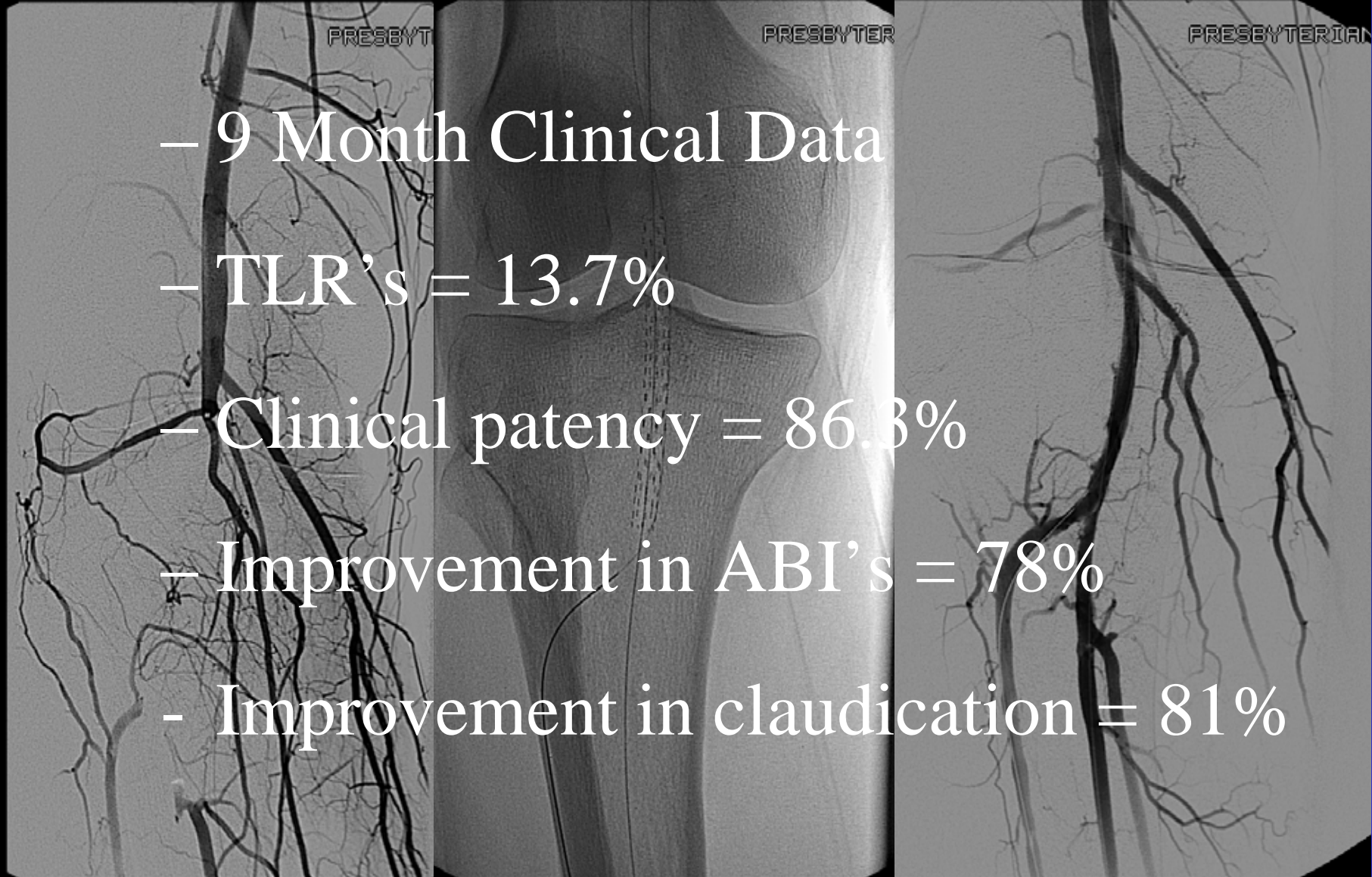


1. Liquid N₂O enters the delivery lumen.
2. N₂O undergoes phase shift to a gas in the balloon causing dilation and cooling.
3. Gas circulates back out the annular space in the catheter and into the cryoinflation device.

Adjunctive Technology-- Cryoplasty

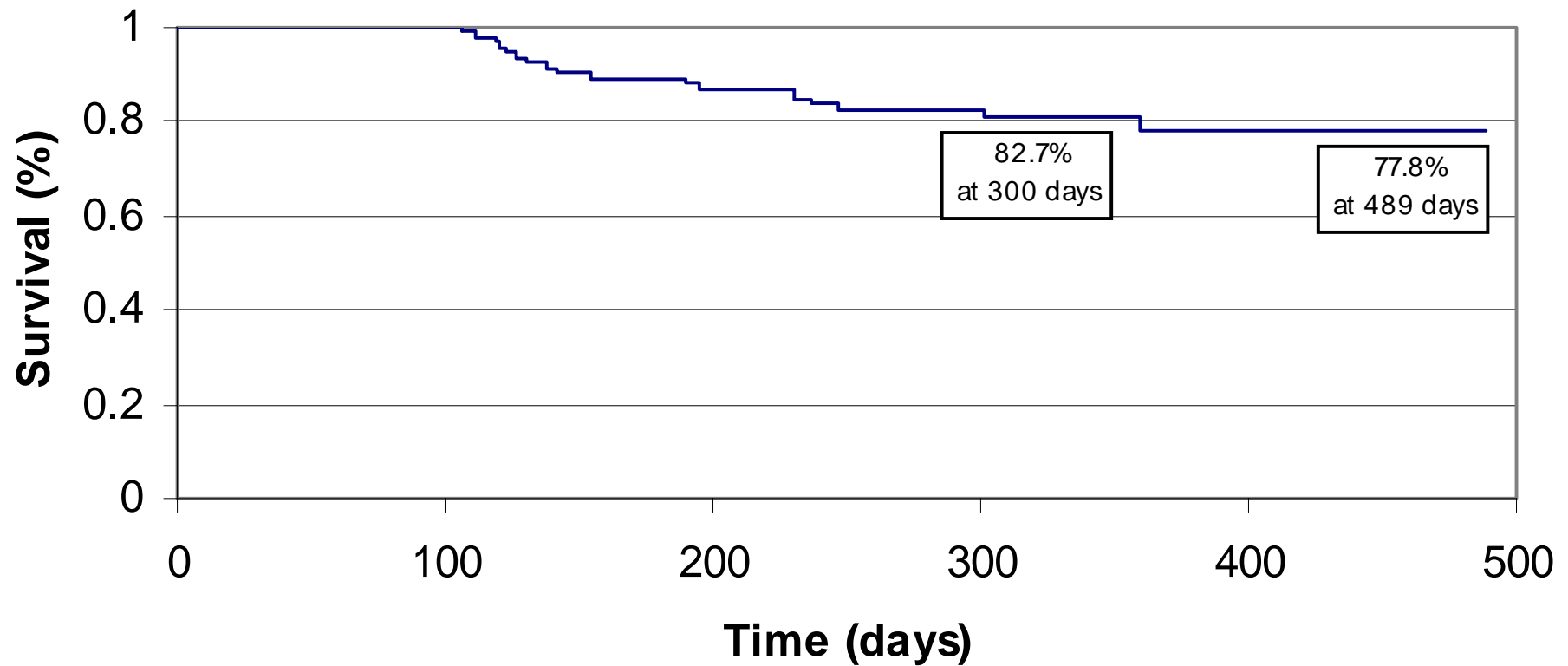


SFA Cryoplasty Data

- 
- 9 Month Clinical Data
 - TLR's = 13.7%
 - Clinical patency = 86.8%
 - Improvement in ABI's = 78%
 - Improvement in claudication = 81%

Cryoplasty Data

Survival free from TLR



SFA Stenting

Stent	No. of Limbs	Occl %	Length (cm)	% Restenosis	Primary Patency	Secondary Patency
Wallstent	199	67	8	30	53	67
Palmaz	171	45	5.7	16	81	92
Strecker	141	60	5.8	29	80	82
Wall/Palmaz	57	89	16.5	39	22	46
Wall/Strecker	32	47	3.7	28	75	93
W/VascuCoil	27	39	9.0	33	66	N/A
Total	627	58	8.1	30	63	76%

Recent Results w/ SFA Stenting

Study	Mean Lesion Length	Stent	Primary Patency (1 Year)	Secondary Patency (1 Year)
Gray et al, 1997	16.5 cm	Wallstent and Palmaz	22%	46%
Gordon et al, 2001	14.4 cm	Wallstent	55%	82%
Bosiers, Euro PCR 2002	4.7 cm	SMART	85%	95%
Ansel, et al, 2004	11.8 cm	SMART	83%	97%
Mewissen, 2003	12.2 cm	SMART	76%	NA

SIROCCO II

Duplex Doppler -18 Month

In-stent	Sirolimus (n=29)	Control (n=28)	P-value
Binary Restenosis	6 (20.7%)	4 (14.3%)	0.73
Occlusion	0	1 (3.6%)	0.49
Total	6 (20.7%)	5 (<u>17.9%</u>)	1.00



WHAT

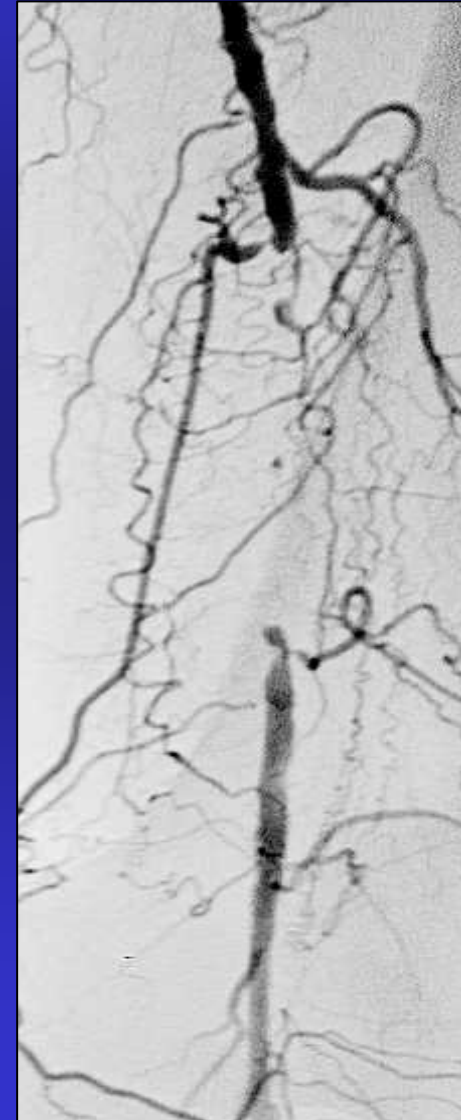
Does The Data Show?

- Data from mostly single center observational registries with various end-points/definitions
- No clearly established technology to reduce restenosis in the SFA

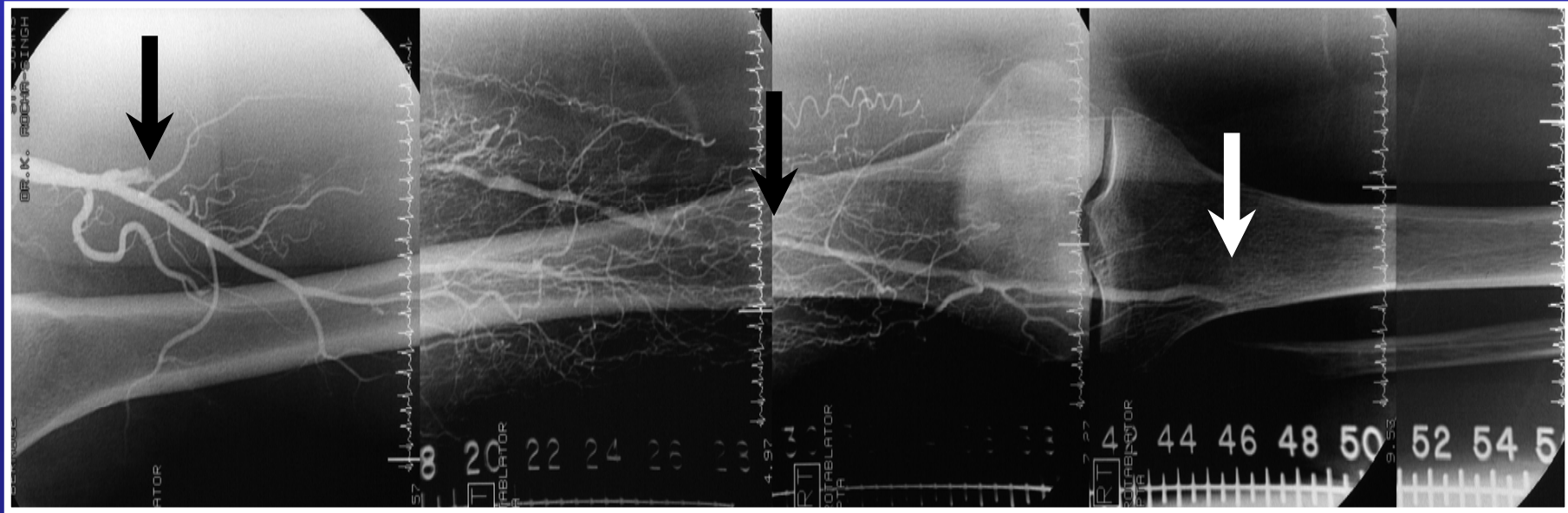


Preprocedure Evaluation

- **Pre-procedure Checklist**
 - ✓ Lesion assessment
 - ✓ Access options
 - ✓ Inflow and outflow issues
 - ✓ Intended strategy
 - ✓ Equipment--new devices
 - ✓ Bailout options
 - ✓ Worse-case scenarios
 - ✓ Short-/long-term success

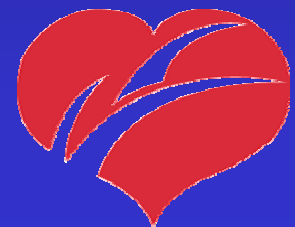


SFA Access Techniques: Consider the Options



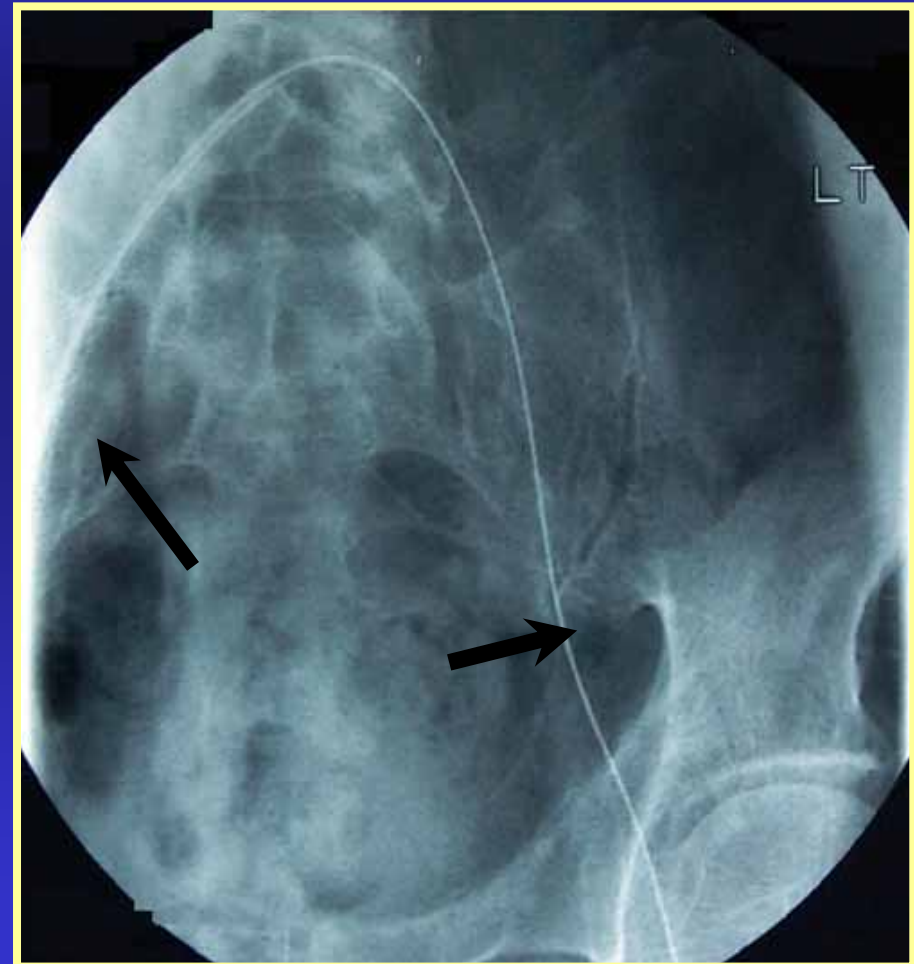
- Contralateral
- Antegrade
- Brachial
- Trans-popliteal

- Potential outcomes
- Bleeding risks
- **Available technology**

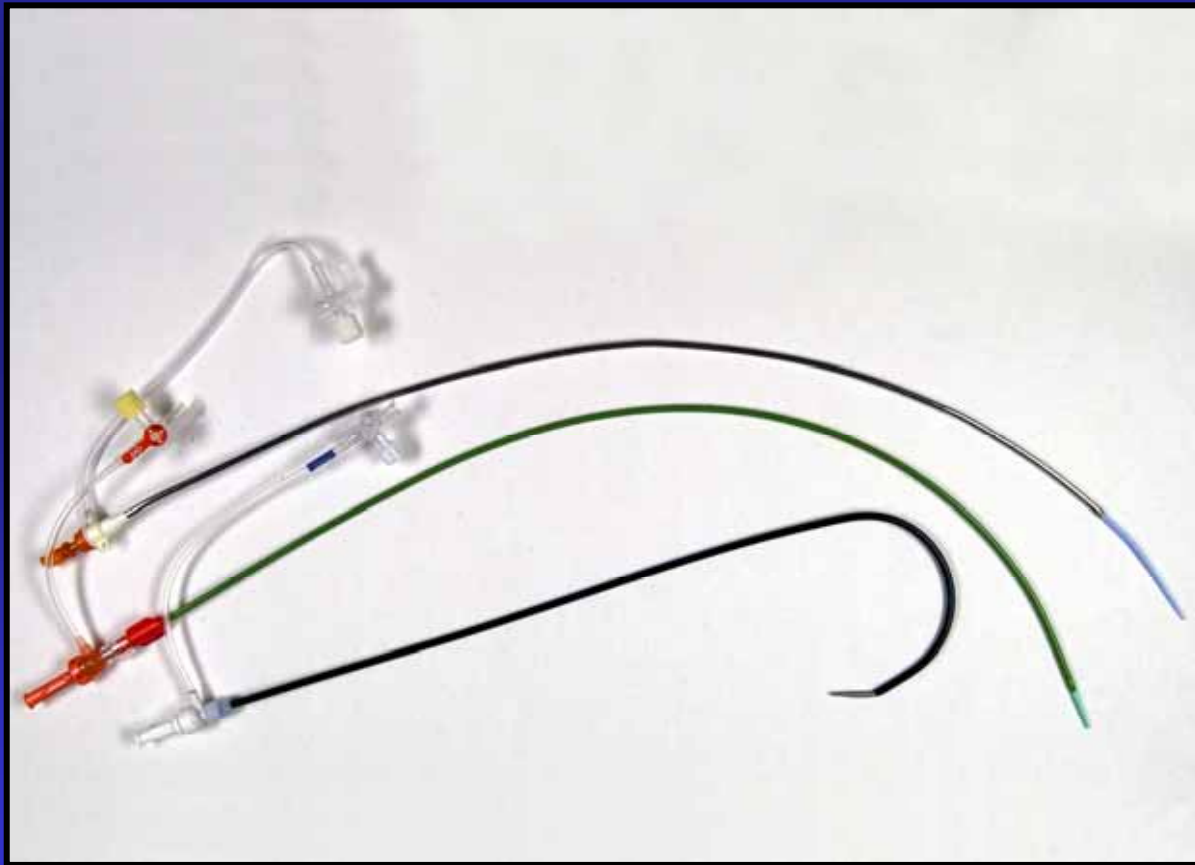


SFA Access Techniques: Contralateral Approach

- Safer for patients
- Easier; less radiation
- Excellent for non-occlusive SFA disease and FP bypass grafts
- Appropriate sheath and catheter lengths a 'must'



Contralateral Approach: Sheath Selection

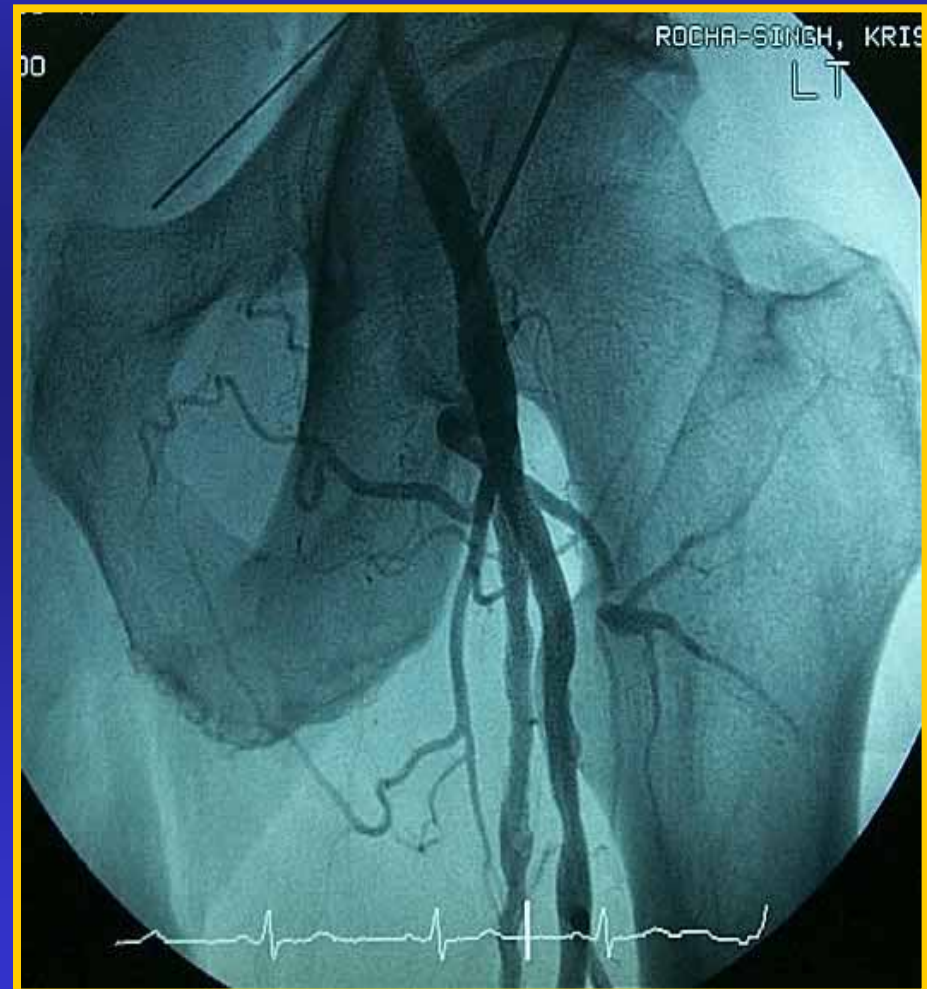


Consider:

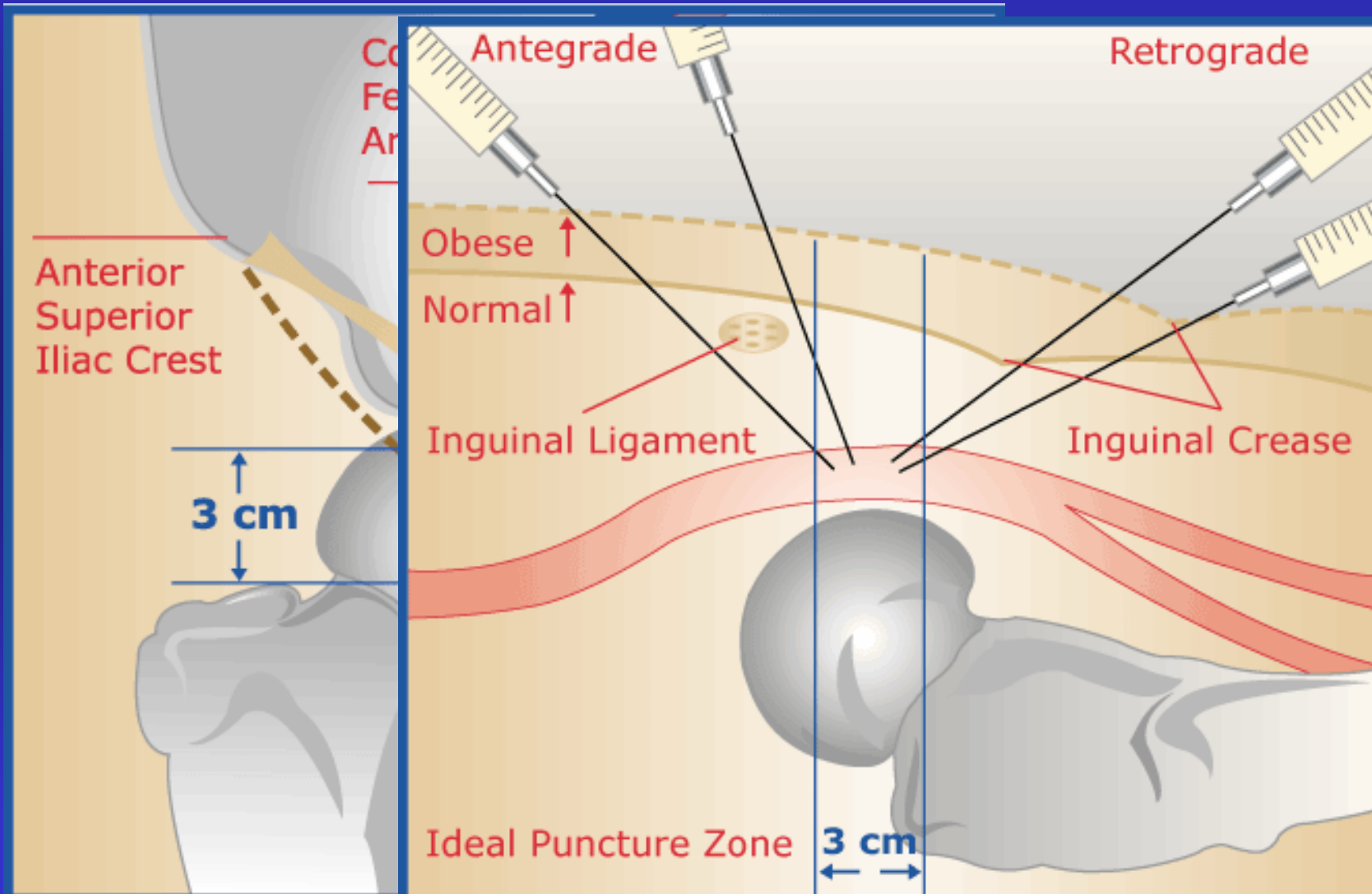
- Technology compatibility
- Sheath length

SFA Access Techniques: Antegrade Approach

- More technically challenging
- Higher risk for bleeding, higher radiation exposure
- Ideal for access to long occlusive disease (wire control/pushibility)
- **Know your anatomy**



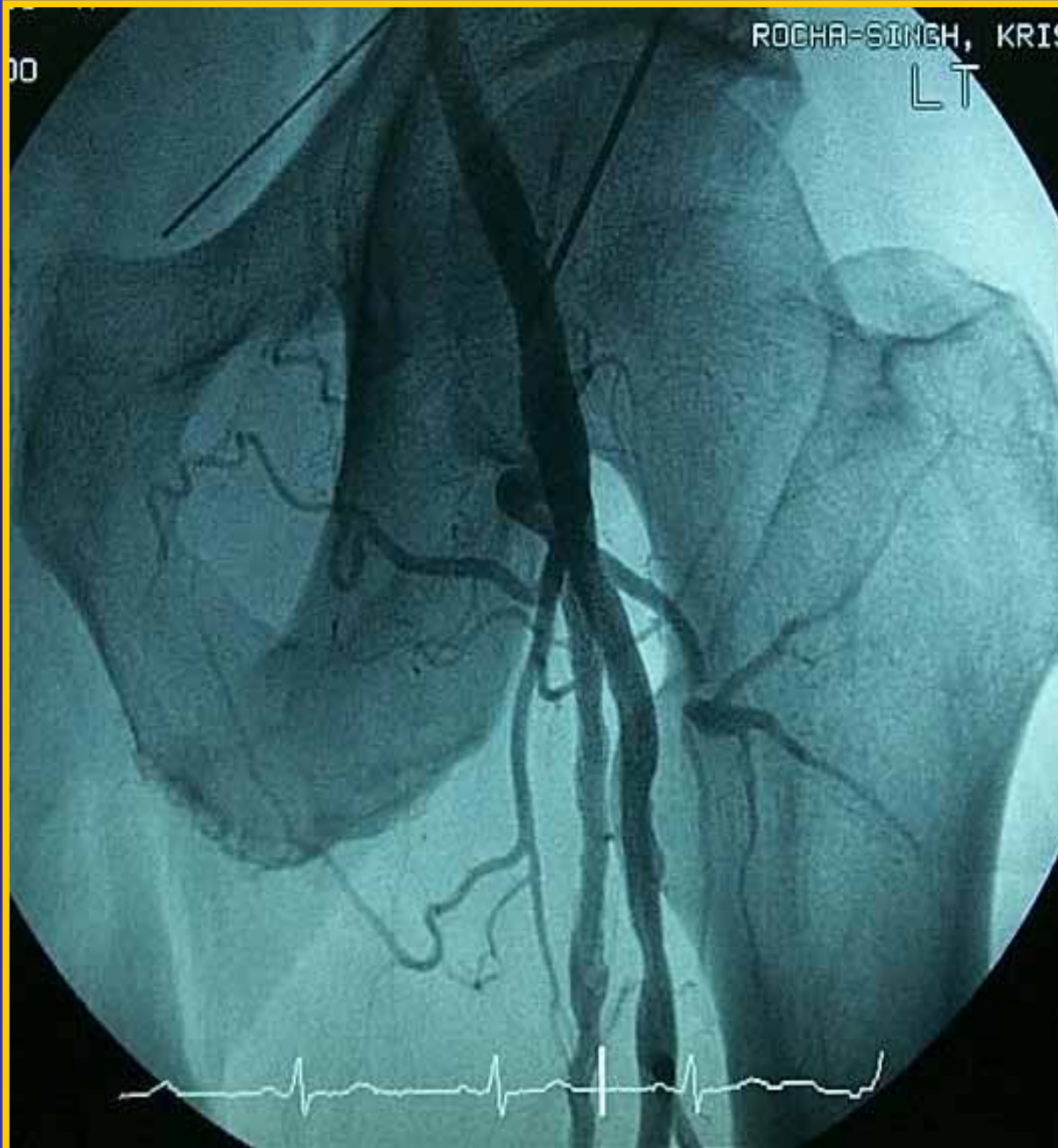
'Lay of the Land'





**Positioning
of
puncture
needle
over
femoral
head**





- Contrast visualization of CFA

- Consider ultrasound visualization or 5F micro-puncture kit



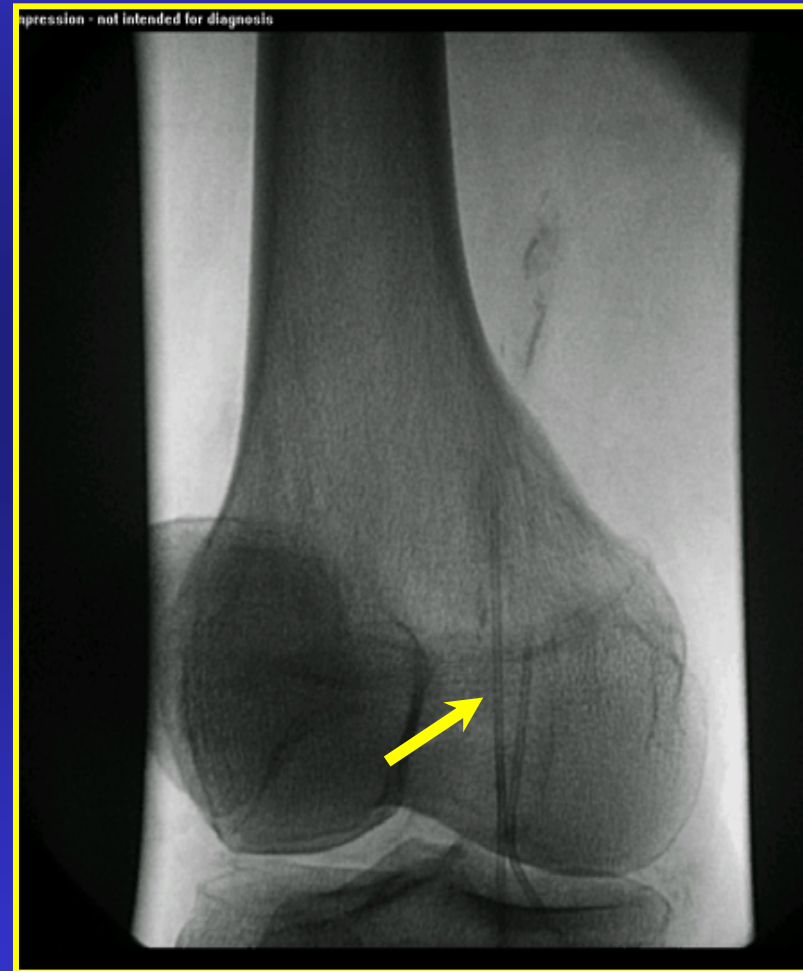
Trans-popliteal Approach: When to Consider

- Failed antegrade approach
- Groin scarring/ infection
- CFA disease
- ABFG anastomotic disease
- Flush SFA occlusion



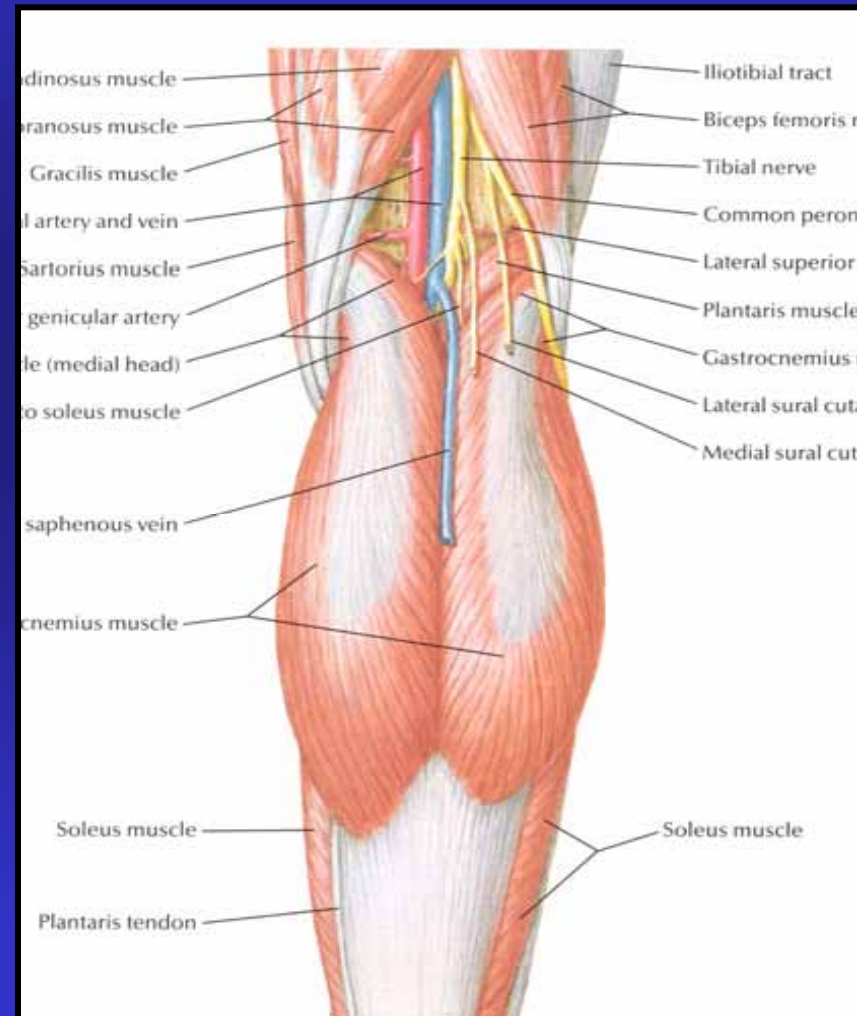
Trans-popliteal Technique

- Contralateral approach w/ sheath in ipsilateral CFA
- 'Pancake' patient
- Direct puncture w/ angiographic road-mapping
- Micropuncture technique



Trans-popliteal Approach: Caution

- **Anatomy:**
Artery deep;
extensive venous
collaterals; tibial
nerve is posterior
- **Risk:** Pain,
compartment
syndrome
- **Consider**
ultrasound or
doppler SMART
needle





Subintimal Angioplasty

AKA 'PIER'



Before



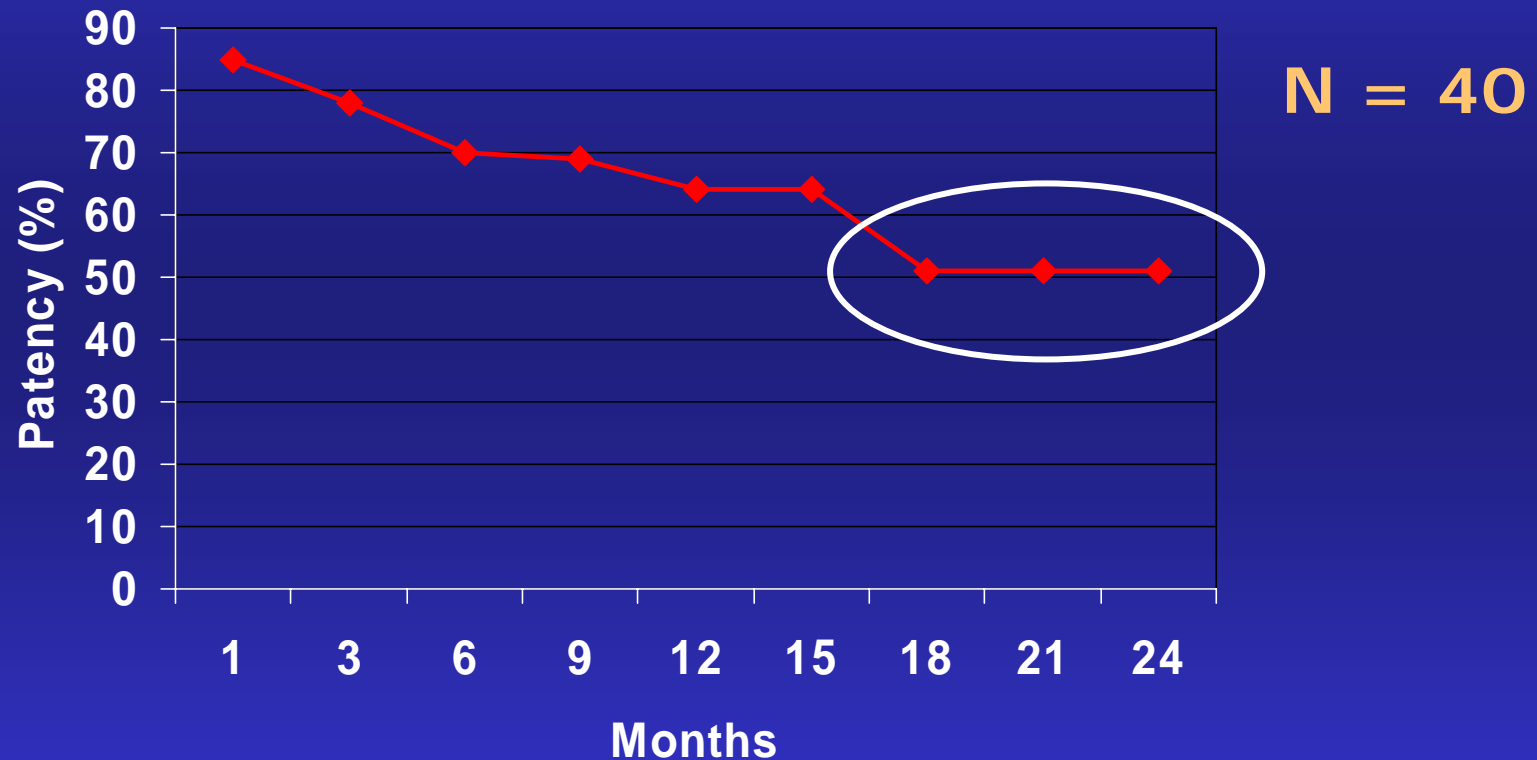
After/proximal



After/distal

**Percutaneous Intentional (Subintimal)
Extraluminal Revascularization**

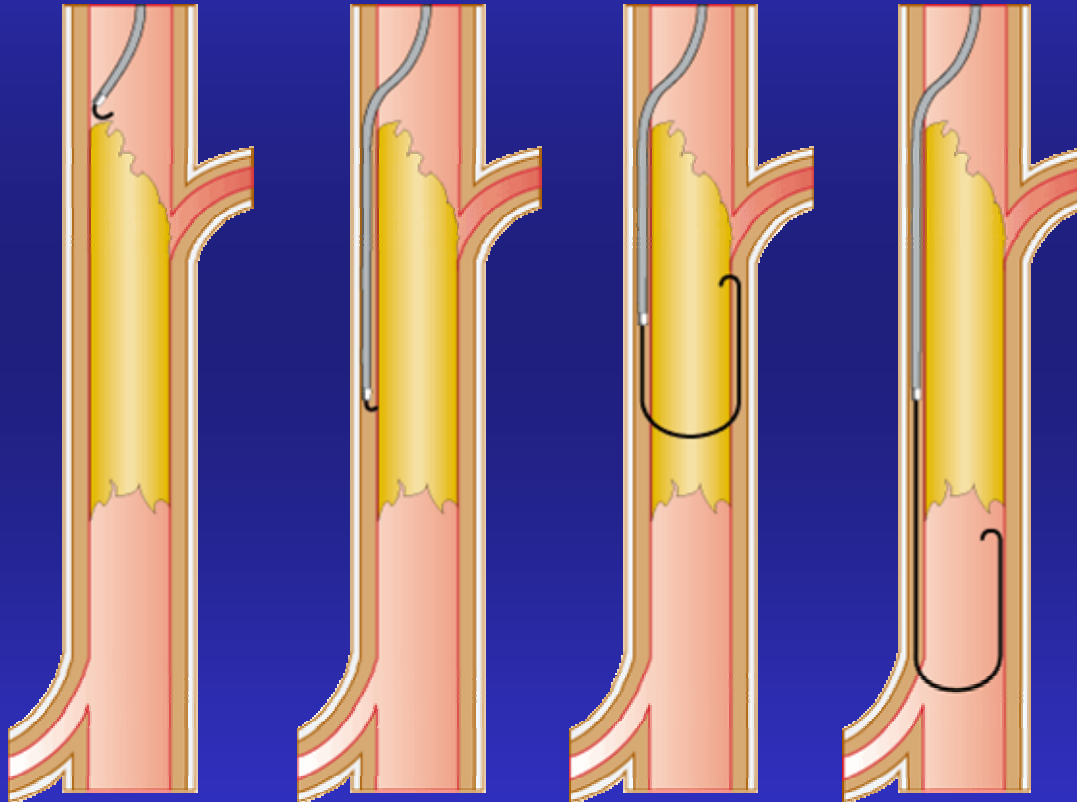
Subintimal Angioplasty



“temporary percutaneous bypass”



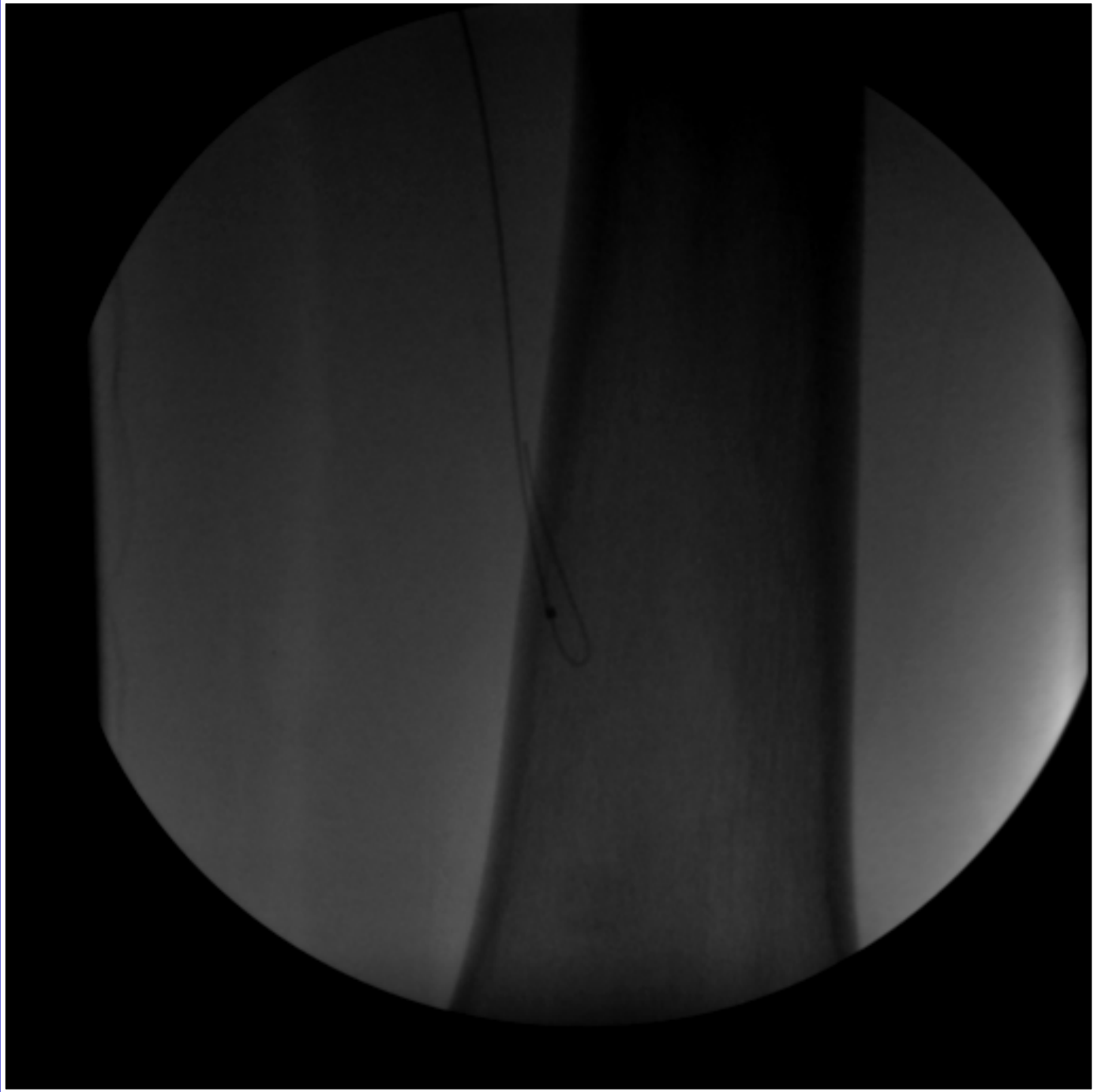
Subintimal Angioplasty



Treat long SFA
occlusive disease

Particularly useful
after failed F-P
bypass; high risk
patients with CLI



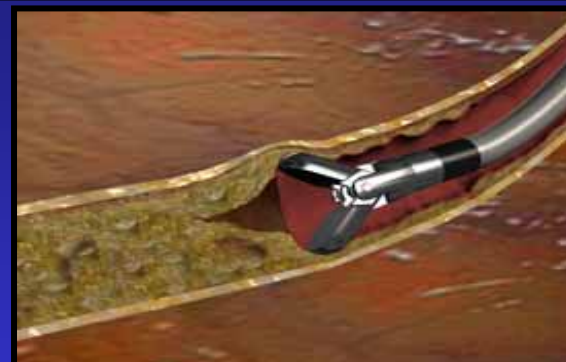
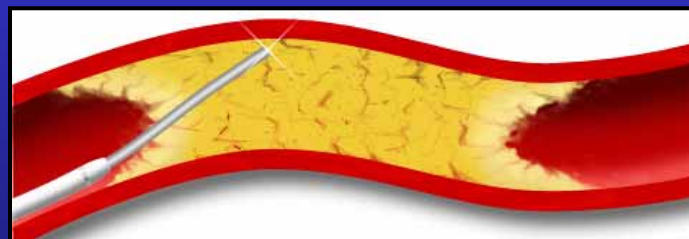


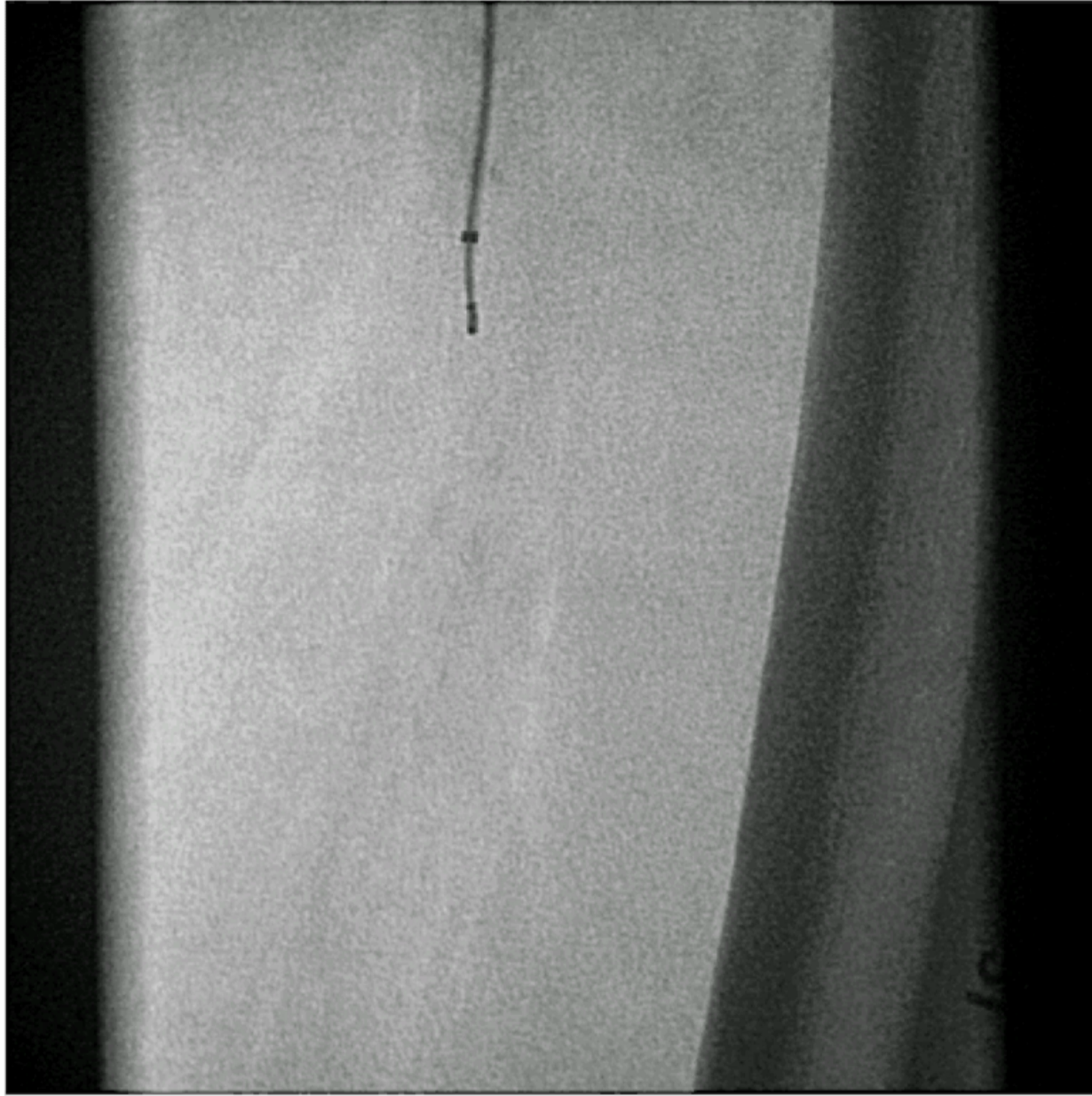
Lossy Compression - not intended for diagnosis



Adjunctive Crossing Technology

- Safe Cross® Radiofrequency wire
- Pioneer® Catheter
- Outback Catheter
- Lumend Frontrunner® blunt micro-dissection catheter

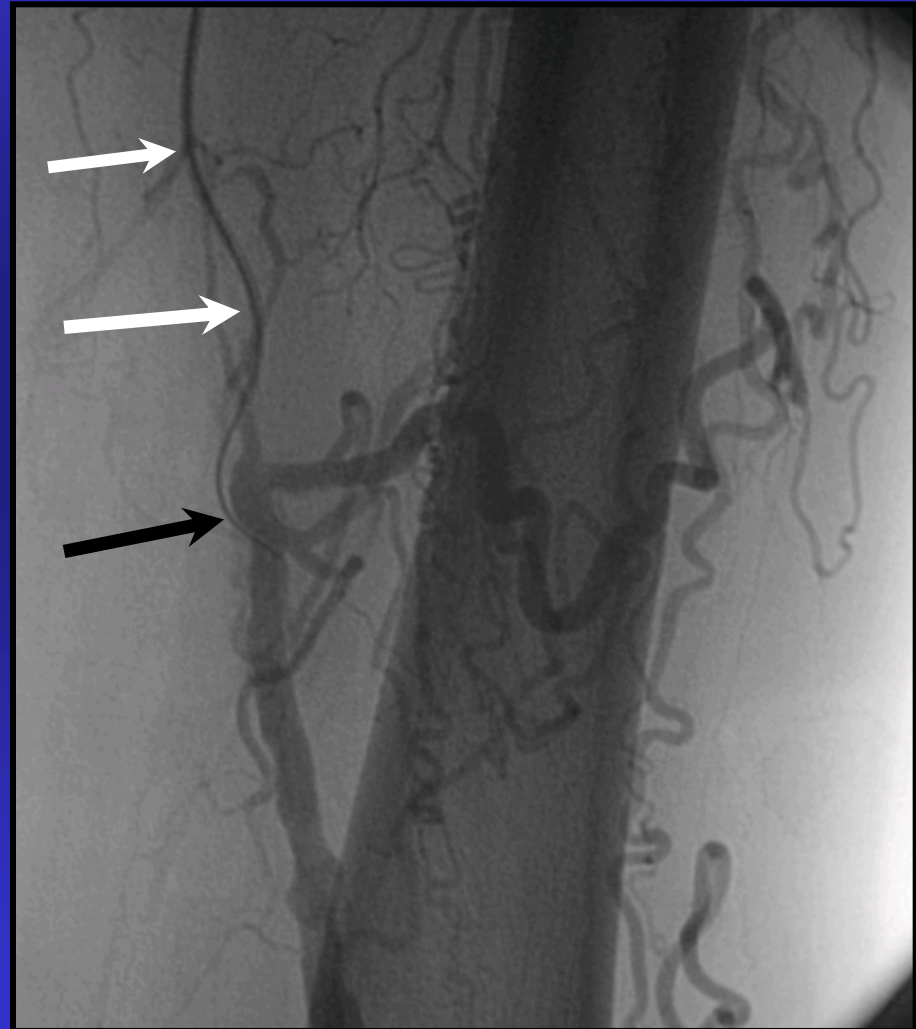




Subintimal Re-Entry

At times...

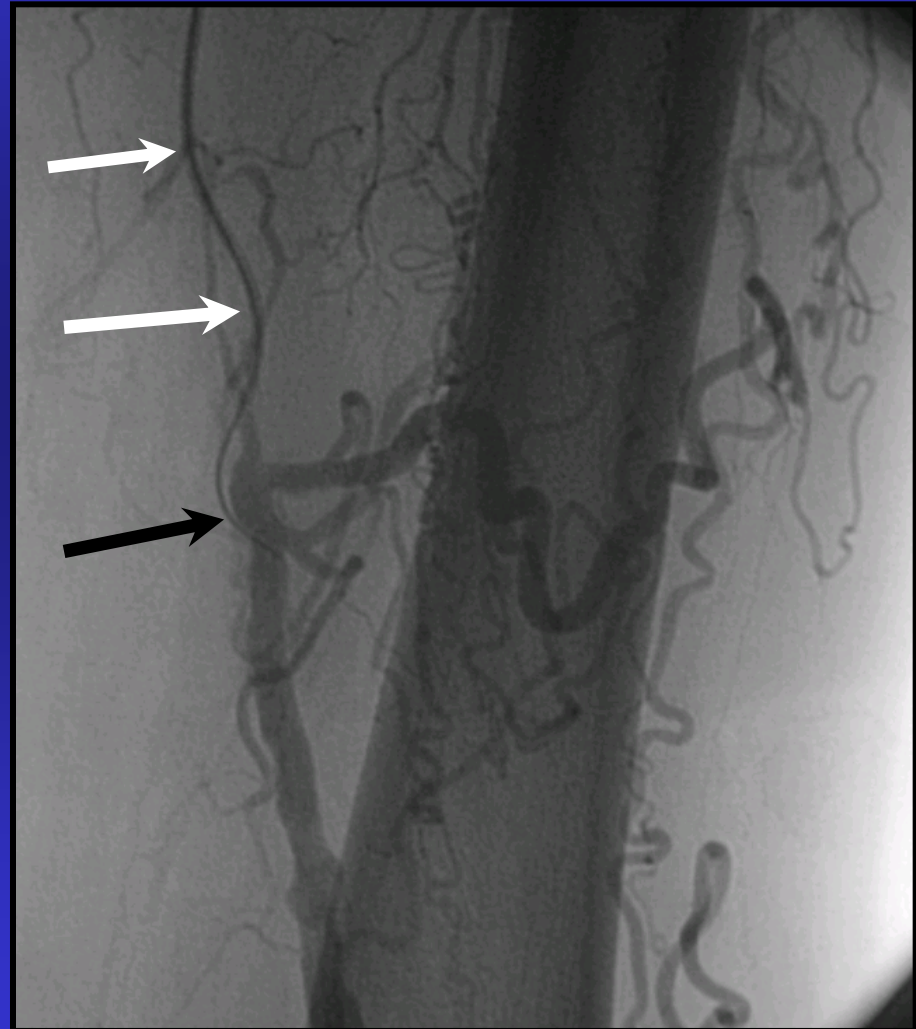
- technically challenging
- time consuming
- frustrating
- the difference between success & failure



Subintimal Re-Entry: Tips

Try to...

- Keep loop 'tight'
- Select area free of calcium
- Away from collaterals
- Consider several wires



Core Peripheral Interventional Tools

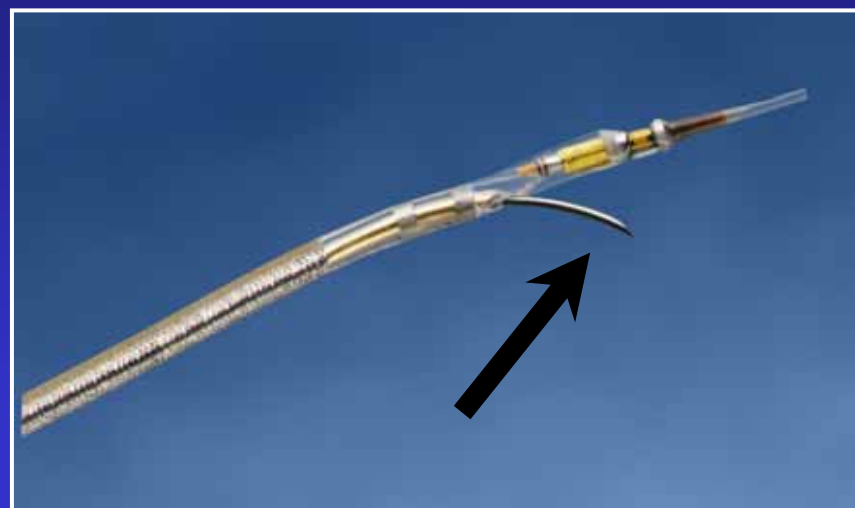
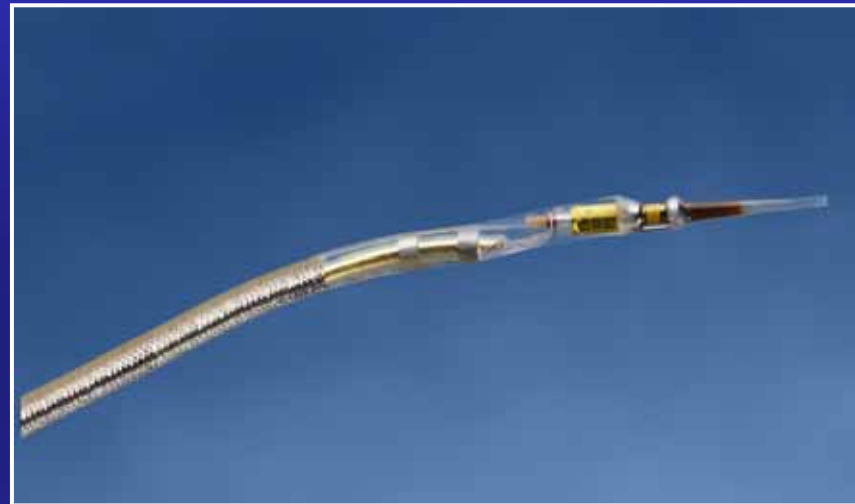
.014" and .018" Guidewires

Guidewire Size	Company	Guidewires
.014"	BSCI	Forte, PT2, Choice PT
	Guidant	HTF, HT-BMW, Cross-It, Wiggle HI-Torque Spartacore
	Abbott	Pro-Water, Miracle Bros
	Cordis	ATW, REFLEX, SHINOBI, Stabilizer
.018"	Guidant	HI-Torque Steelcore
	Cordis	SV .018"

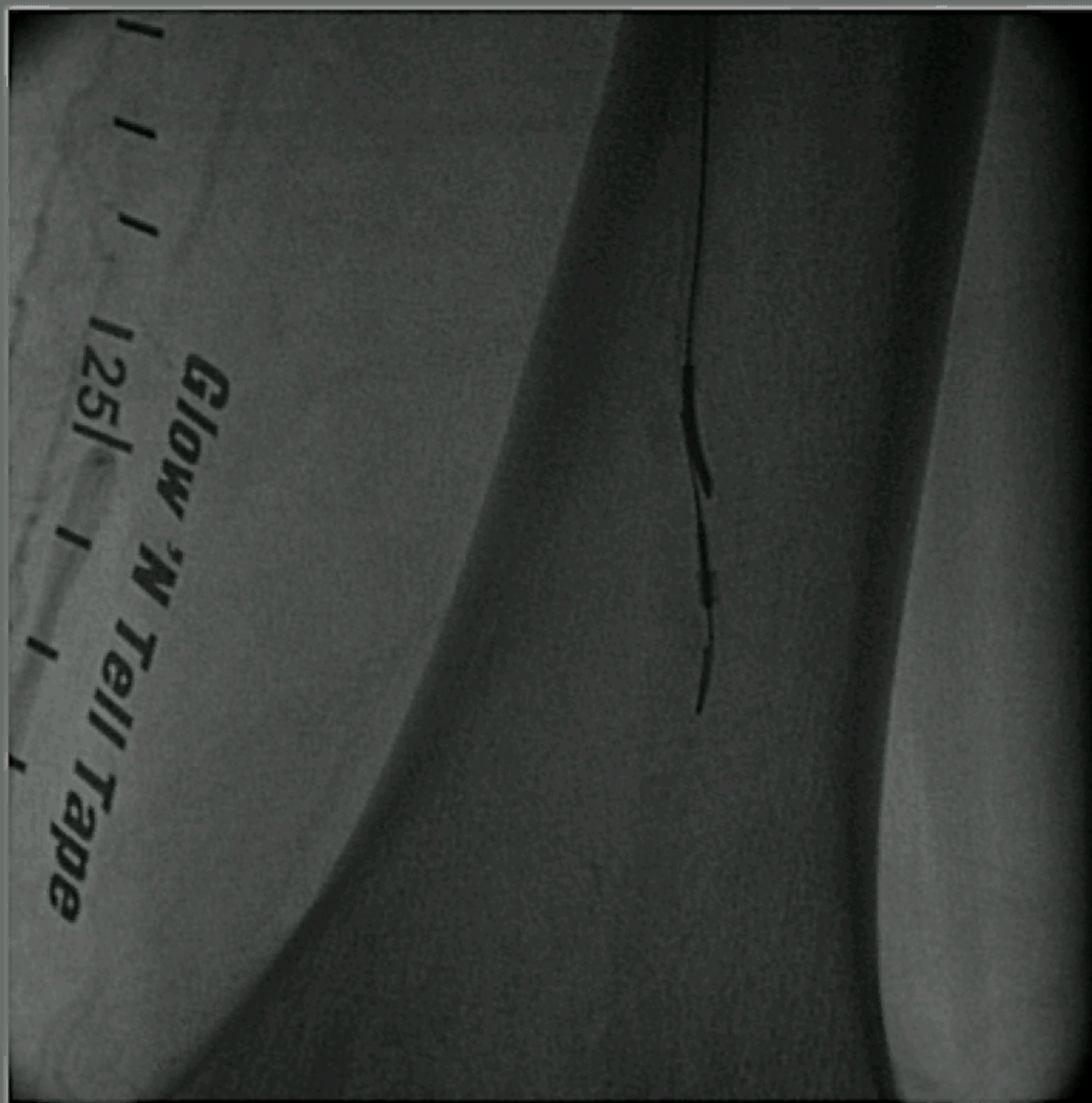
Re-entry Catheters: Pioneer[®] and Outback[®]

Key Features:

- 24G needle allows for delivery of a 0.014" guidewire
- Flexible shaft for contralateral approach
- 7F sheath compatible (0.087" I.D.)
 - 6F Input PS Medtronic sheath

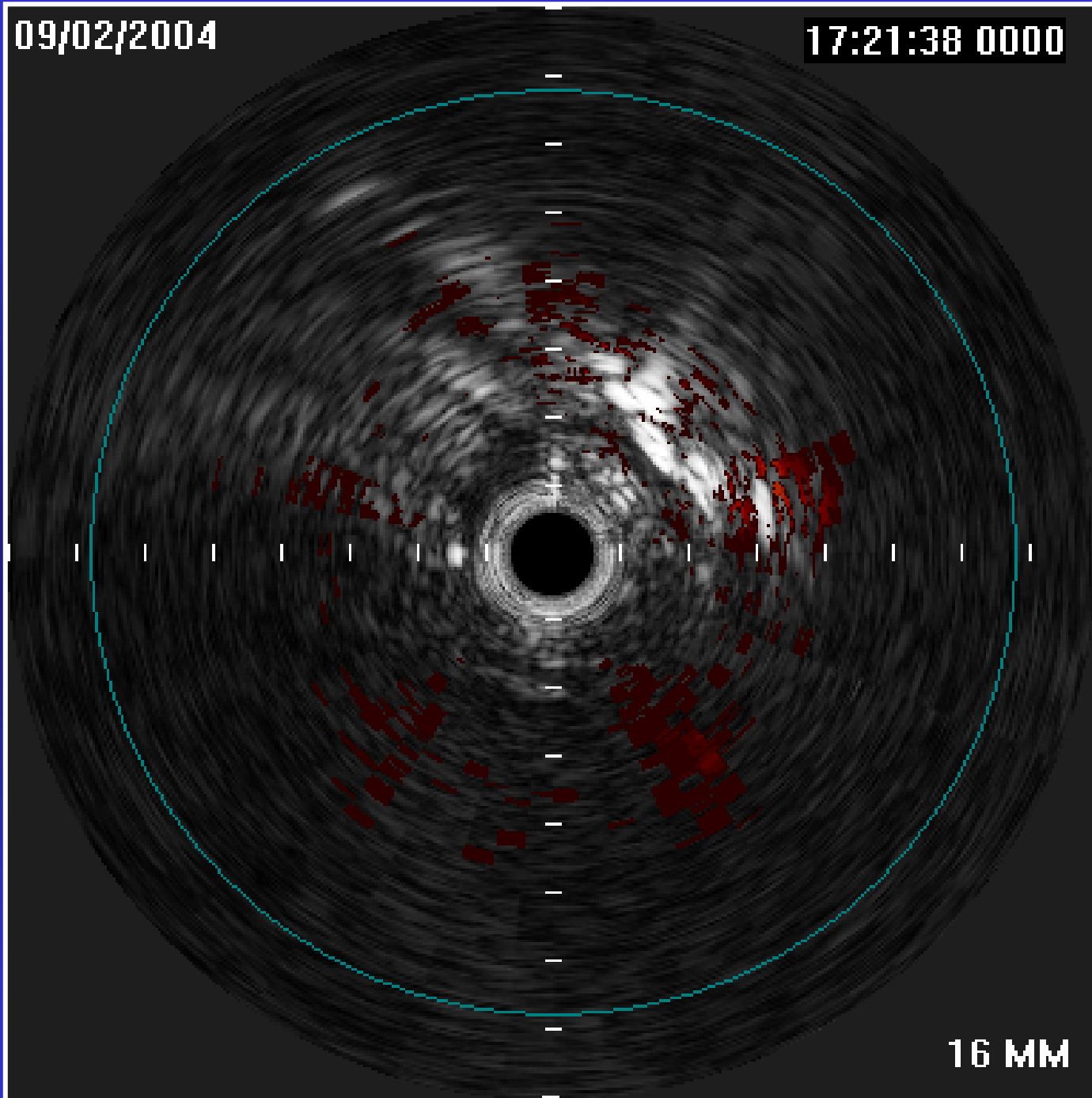


Lossy Compression - not intended for diagnosis



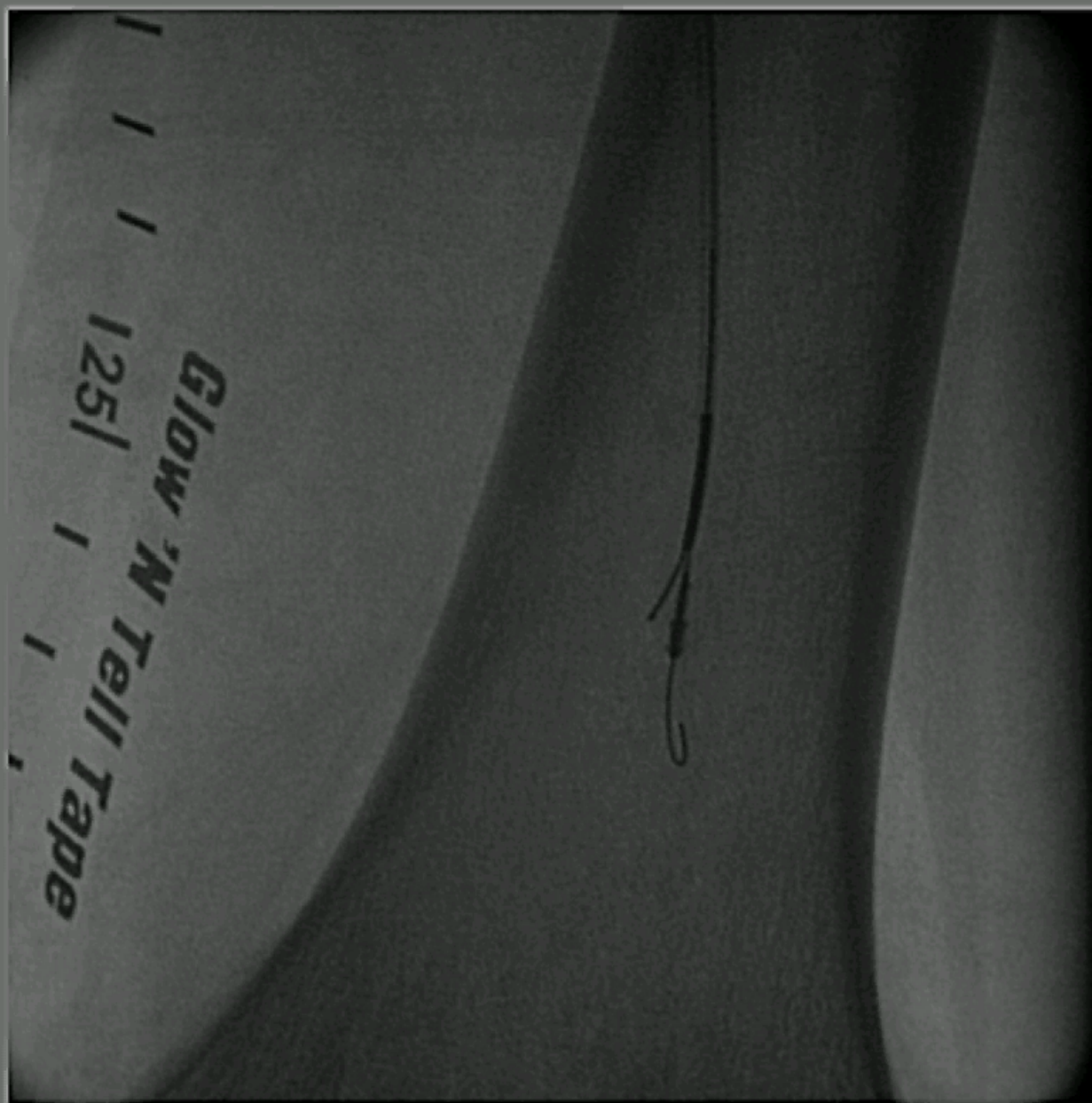
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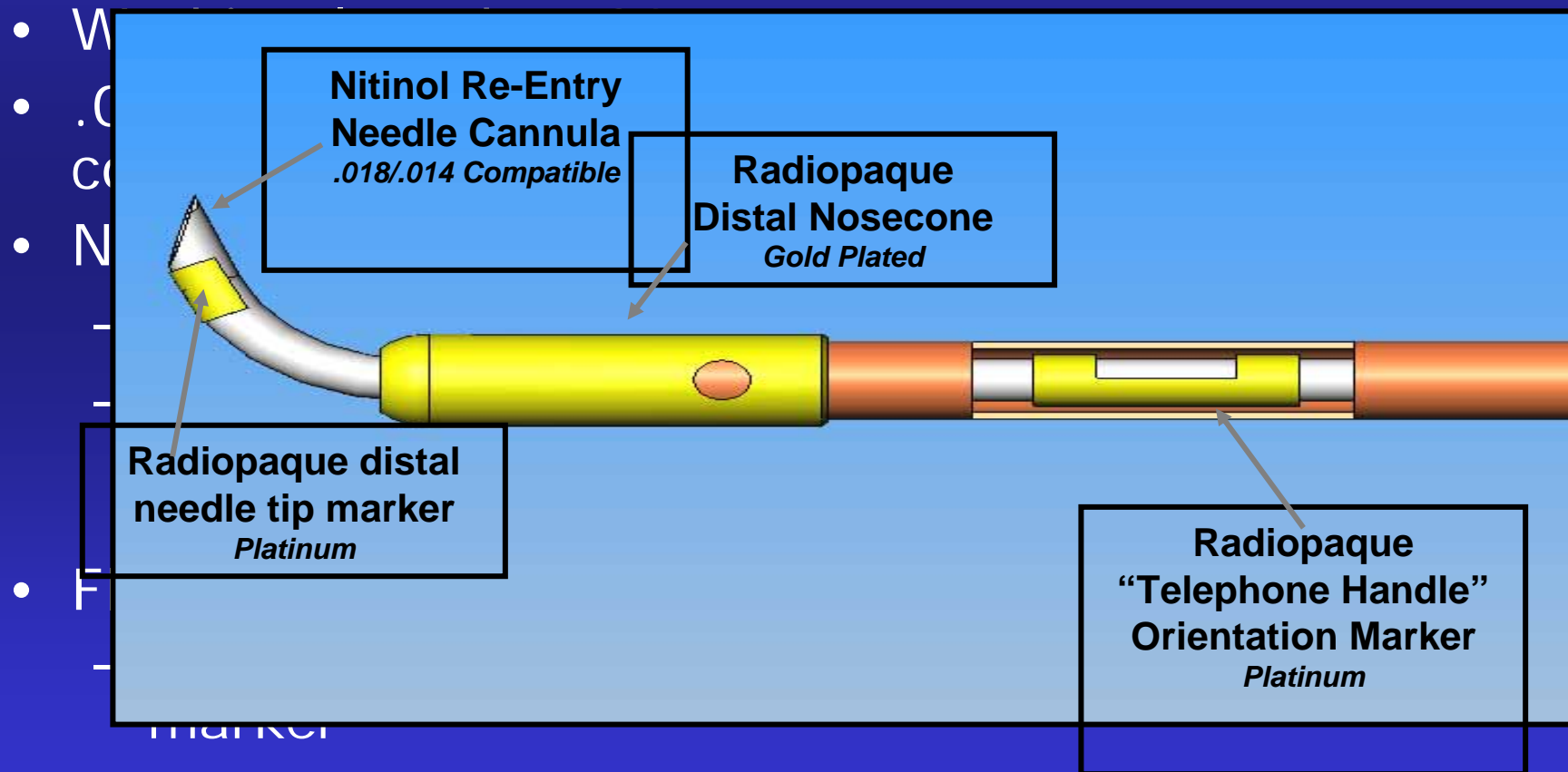
16 MM

Lossy Compression - not intended for diagnosis



Outback Device Specifications

- Outer diameter: 4.8F



Lossy Compression - not intended for diagnosis



Lossy Compression - not intended for diagnosis



***Techniques + Technology =
Improved Patency???***

